PROJECT TITLE : NITRATE-REDUCTION BY CONTROLLED FERMENTATION

PERIOD COVERED : OCTOBER 17 - NOVEMBER 16, 1981

WRITTEN BY : SCHULTHESS-D. (DIS)

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1. LEAR TRIALS 11 AND 12

In order to avoid a recurrence of the clogging problems encountered during LEAR trial 10 (1), the pH of the fermentation and thus all the liquid flow in the system (extract recycling) was brought up to 5.0. In this way the clogging of the piping could be reduced to a great extent.

However, after one week's continuous denitration (LEAR trial 11), the fermenter was found to be heavily contaminated with bacteria. The trial was stopped and restarted in the same conditions (LEAR trial 12). Again, after one week, this trial had to be stopped for the same reason.

2. ORIGIN OF THE CONTAMINATION

The following tests were made in order to determine the origin of the contamination :

- Candida utilis agar slants, used for starting up the process were checked for purity and found to be in order.
- Shaken flask cultures were checked for purity and were not always found to be in order. The sterilization and handling will be reviewed.
- The 20-l fermenter was checked for sterility. It was heavily contaminated after 2 days. The sterilization and handling will be reviewed.
- The citric acid used for pH control of the 20-l fermenter proved to be contaminated. All the citric acid used in future will be sterilized.

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- Chemap personnel checked the 750-l fermenter and found several points to be unsatisfactory (2). A sterility test will be made.

- The ingredients and extract were checked for sterility after they had passed through the sterilization level and the mixing vessel. Plate counts did not reveal the presence of any viable organisms in these liquids.

3. NITRATE MONITORING

The nitrate monitoring system was installed in the pilot plant. At present it is only used to record the nitrate levels in the extract after extraction. The proportional addition of glucose will be performed at a later stage.

4. REFERENCES

1) Luthi-N, Monthly Report, Pilot Plant Operations, October 1981.

2) Letter from Chemap to Schulthess-D. dated November 12, 1981.

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